

## REMARKS

Reconsideration and withdrawal of all grounds of rejection are respectfully requested in view of the above amendments and the following remarks. Claims 1-7, 10-14, 16-18, 20-22 and 24-28 were rejected. By this Amendment, claims 1, 10, 16, 20, 25 and 28 have been amended. No claims have been cancelled by this amendment. Consequently, claims 1-7, 10-14, 16-18, 20-22 and 24-28 are now pending.

The Examiner has rejected claims 10-14 under 35 U.S.C. § 101 because the claimed invention is directed to non-statutory subject matter. Specifically, the Examiner states that "machine-readable medium" is not tangibly embodied in a computer-readable medium. In response, the preamble of claim 10 has been properly amended to be directed toward statutory subject matter, i.e., computer-readable medium, and is allowable. The specification as filed has ample support for this amendment, i.e., the subject of computer readable medium is well discussed. (for example, see page 6, lines 11-20). Claims 11-14 as pending depend from amended claim 10 and are also allowable. Therefore, withdraw of this rejection is respectfully requested.

The Examiner has rejected claims 20-22, 25 and 27 under 35 U.S.C. § 112, second paragraph, as being indefinite for failure to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Independent claim 20 and dependent claim 25 have been properly amended to correct the indefiniteness as cited by the Examiner and are allowable. Claims 21-22 and 27 as pending depend from amended claim 20 and are also allowable. Therefore, withdraw of this rejection is respectfully requested.

The Examiner has rejected claims 1-7 under 35 U.S.C. § 103(a) as being unpatentable over the Breese et al. reference in view of EP 0751471 A1 to Lashkari et al. Independent claim 1 is directed to a computer-implemented process. As pending, claim 1 reads as follows:

1. (previously amended) A computer-implemented method comprising:  
consolidating data organized into records and items, such that each record has a value for each item, into a plurality of groups;  
based on the plurality of groups, determining a predicted vote for a particular record and a particular item using a similarity scoring approach that reflects likelihood similarity between at least one probability model that characterizes an essentially complete group of the plurality of groups and the particular record; and,  
outputting the predicted vote for the particular record and the particular item. (emphasis added)

Referring now to the primary reference, Breese et al. (*Empirical Analysis of Predictive Algorithms for Collaborative Filtering*) discusses a method of determining consumer preference by applying collaborative filtering or recommender system techniques to a database. An exemplary database contains user preference data concerning a collection of individual users. As correctly stated by the Examiner, Breese et al. does not teach nor suggest the limitation recited in pending claim 1 of “a similarity scoring approach that reflects likelihood similarity between at least one essentially complete group of the plurality of groups and the particular record.”

The Examiner has cited a secondary reference on the grounds that it teaches the similarity scoring approach recited in claim 1 of the present application. The reference cited by the Examiner, EP 0751471 A1 to Lashkari et al., is directed to a method and apparatus for item recommendation using automated collaborative filtering. As Applicants understand the Examiner’s rejection, it is asserted that “neighboring users” as identified by the Lashkari et al. reference is “equivalent to the group assigned to the user record” of the present application. (see Office Action, page 4, line 17). Applicants’ undersigned representative respectfully disagrees with the Examiner’s assertion. In all embodiments discussed in the Lashkari et al. reference, a user is compared with each individual user and not to a group probability model. This difference is important since Applicants’ process can precalculate the group model and rapidly determine a similarity and the Lashkari et al. process must determine a similarity between individual users in the entire group regardless of how those users were previously identified. Consequently, this rejection should be withdrawn.

Lashkari et al. does not teach the similarity scoring approach involving an essentially complete group and a particular record, but rather a more complicated and less-desirable approach, involving determining a correlation between each member of a sub-group and a particular record. In fact, Lashkari et al. uses similarity scoring to further divide the data into smaller categories than the distinction of groups. After collecting data for individual users and

storing the records into groups, Lashkari et al. does not teach utilizing clustering activities. Rather, Lashkari et al. teaches comparing every record in the particular group to every other record for the purpose of calculating similarity factors. (page 2, lines 35-36). These similarity factors are not used for recommendation, but rather are used to calculate “neighboring users” as a subset, a further division within the group. In another complication not in the present invention, the sub-grouping into neighboring users is repeated for each particular record. In other words, the neighboring user sub-groups are formed only for a single recommendation, and must be repeated for each record within the larger group itself. Only after the neighboring users sub-group for the single particular record in question is established, the recommendation is made. At least for the fact that the Examiner’s premise is incorrect, this rejection should be withdrawn.

Further, the process of the present invention uses a similarity scoring approach of attributes between a record and the attributes of a group model to assign or choose a group for purposes of a prediction. In contrast, Lashkari et al. teaches comparing the record to not the attributes of the group, but to the weights assigned to each member of the sub-group, i.e., the neighboring users. This step appears to defeat the inherent purposes of grouping to avoid individual comparisons and therefore teaches away from Applicants’ invention.

As discussed, Breese et al. does not teach the similarity scoring approach involving an essentially complete group and a particular record. Moreover, one skilled in art would not look to Lashkari et al. in hopes of curing this deficiency. Lashkari et al. clearly discloses a process with additional sub-dividing steps. As discussed, the steps are not performed just one additional time leading to permanent sub-groups, but for every record each time a recommendation is made. This sub-dividing incrementally increasing the time required to perform and complete the desired function. As databases grow in size, any additional process steps are undesirable and for a database of many millions of records is not feasible. Thus, one skilled in the art would lack motivation to combine the teachings of Lashkari et al. with the primary reference to achieve the desired result.

For at least the reasons set forth above, it is respectfully submitted that the combination of Breese et al. and the cited secondary reference to Lashkari et al. does not render independent claim 1 obvious. Further, it is submitted that claims 2-7 are patentable at least by virtue of dependence on claim 1. Therefore, withdrawal of this rejection is respectfully requested.

The Examiner has rejected claim 10-14 and 25 under 35 U.S.C. § 103(a) as being unpatentable over the Breese et al. reference in view of EP 0751471 A1 to Lashkari et al. Claim 10 features a computer-readable medium based on claim 1 and all the arguments presented above with regard to claim 1 are appropriate for this claim. Accordingly, this claim is allowable. Claims 11-14 and claim 25 as amended depend from allowable claim 10 and are also allowable.

The Examiner has rejected claim 16-18 and 26 under 35 U.S.C. § 103(a) as being unpatentable over the Breese et al. reference in view of EP 0751471 A1 to Lashkari et al. Claim 16 recites a computer-implemented method operable on data organized into records and items. Each record has a value for each item. The data is consolidated into a plurality of clusters. Based on the plurality of clusters, a predicted vote is determined for a particular record and a particular item using a likelihood similarity scoring approach or a correlation similarity scoring approach between the particular record and essentially one complete cluster. The predicted vote for the particular record and the particular item is then output from the computer. This claim features the recitation of clusters rather than groups. The subject matter of claim 16 is neither shown nor suggested either alone by the Breese et al reference or by the Breese et al reference in combination with the Lashkari et al. Therefore, independent claim 16 and dependent claims 17, 18 and 26 are allowable.

The Examiner has rejected claim 20-22 and 27 under 35 U.S.C. § 103(a) as being unpatentable over the Breese et al. reference in view of EP 0751471 A1 to Lashkari et al. Claim 20 features a computer-implemented method operable on data organized into records and items, so that each record has a value for each item. The data is also consolidated into a plurality of descriptors. Based on the plurality of descriptors, a predicted vote for a particular record and a particular item is determined using a correlation similarity scoring approach that finds a similarity between the particular record and one essentially complete descriptor. The predicted vote for the particular record and the particular item is provided as an output. These features are neither shown nor suggested by Breese et al either alone or in combination with Lashkari et al. Therefore, claim 20 and dependent claims 21-22 and 27 are allowable.

The Examiner has rejected claim 28 under 35 U.S.C. § 103(a) as being unpatentable over the Breese et al. reference in view of EP 0751471 A1 to Lashkari et al. Claim 28 is modeled after allowable claim 1. Claim 28 recites, however, that a similarity scoring approach featured in the claim reflects correlation similarity between at least one essentially complete group of the plurality of groups and a particular record. This claim is neither shown nor suggested by the Breese et al reference either alone or in combination with the Lashkari et al. reference and therefore this claim is allowable.

This amendment seeks to amend the pending claims to correct errors identified by the Examiner as well as to better define the invention. As a result, no new issues are raised and entry of this amendment is appropriate to overcome objections, e.g., § 112 issues, in order to simplify any issues on appeal.

In view of the above, it is respectfully submitted that the invention of independent claims 1, 10, 16, 20 and 28 is patentable. Further, the subject matter of the remaining dependent claims is patentable at least by virtue of dependence on claims 1, 10, 16, 20 and 28. Therefore, it is believed that all pending claims of this application are in condition for allowance. Accordingly, entry of the Amendment and a subsequent early Notice of Allowance for all pending claims of this application is respectfully solicited.

Respectfully submitted,

Date: Aug 5, 2003  
Telephone: (216) 241-6700  
Facsimile: (216) 241-8151

  
Stephen J. Schultz  
Reg. No. 29,108